



City of Santa Clara
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COOL ROOFS REQUIREMENTS AND INFORMATION 2013 CALIFORNIA ENERGY CODE


COOL ROOF requirements were adopted by the California Energy Commission – (CEC) for non-residential buildings and low-rise residential buildings. This requirement became effective for newly constructed buildings, additions and the re-roofing of existing buildings for which permit applications were filed on or after July 1, 2014.

1. COOL ROOFS

To qualify as a COOL ROOF under the 2013 California Energy Code, the roofing material must:

- Have a Cool Roof Rating Council (CRRC) rating for Solar Reflectance and Thermal Emittance
- Meet the Aged Solar Reflectance and Thermal Emittance or SRI

The roofing products manufacturer must have its roofing product tested for solar reflectance and thermal emittance, and be listed in the CRRC's Rated Product Directory (see <http://www.coolroofs.org>) and be labeled as in the following example:

	Solar Reflectance	Initial 0.00	Weathered Pending
	Thermal Emittance	0.00	Pending
	Rated Product ID Number		
	Licensed Seller ID Number		
	Classification		
Production Line			
<p>Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.</p> <p>Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.</p>			

The labeled product material shall be available for the jurisdiction's permit inspector at the time of inspection.

2. NON RESIDENTIAL BUILDING (2013 California Energy Code, Section 140.3(a).1)

COOL ROOF REQUIREMENTS:

Construction Type	Slope	Min. 3-year Aged Solar Reflectance	Min. Thermal Emittance	Minimum Solar Reflectance Index (SRI)
New Constructions, Additions and Re-Roofing	2:12 or less	0.63	0.75	75
	Greater than 2:12	0.20	0.75	16

Notes:

- An Aged Solar Reflectance less than 0.63 is allowed provided the maximum roof/ceiling U factor in Table 140.3 (see next page) is not exceeded.
- If the Aged Reflectance (R_{AGED}) is not available in the CRRC's Rated Product Directory, it can be calculated using the equation:

$$R_{AGED} = [0.2 + \beta (\rho_{initial} - 0.2)] \text{ where } \beta = 0.65 \text{ for field-applied coating} \\ = 0.70 \text{ for Not a field applied coating} \\ \rho_{initial} \text{ is the Initial Solar Reflectance.}$$

TABLE 140.3 ROOF/CEILING INSULATION TRADEOFF FOR AGED SOLAR REFLECTANCE

Nonresidential					
Aged Solar Reflectance	Metal Building Climate Zone 1-16 U-factor	Wood framed and Other Climate Zone 1 & 5 U-factor	Wood Framed and Other Climate Zone 2-4, 9-16 U-factor	Wood Framed and Other, Climate Zone 6 U-factor	Wood Framed and Other Climate Zone 7 & 8 U-factor
0.62-0.60	0.061	0.045	0.036	0.065	0.059
0.59-0.55	0.054	0.041	0.034	0.058	0.053
0.54-0.50	0.049	0.038	0.032	0.052	0.048
0.49-0.45	0.047	0.035	0.030	0.047	0.044
0.44-0.40	0.043	0.033	0.028	0.043	0.040
0.39-0.35	0.039	0.031	0.027	0.039	0.037
0.34-0.30	0.035	0.029	0.025	0.037	0.035
0.29-0.25	0.033	0.027	0.024	0.034	0.032

COOL ROOF EXEMPTIONS:

The following buildings and re-roofing of existing buildings are exempt from **COOL ROOF** requirements:

- a. Buildings those are not heated or air-conditioned.
- b. Buildings where the prescriptive or performance energy analysis approach justifies other roofing types.
- c. Guest Rooms of Hotel and Motel buildings and High Rise Residential buildings with low sloped roof (2:12 or less).
- d. Qualified historical buildings.
- e. Re-roofing where the re-roofed area is less than 2,000 square feet or 50 percent of the roof, whichever is less.
- f. Re-roofing of rock or gravel surfaced roofs that meet the following five prescribed conditions.
 - 1) The existing roof has a rock or gravel surface, and
 - 2) The new roof has a rock or gravel surface, and
 - 3) There is no removal of existing layers of roof coverings of more than fifty percent of the roof or more than 2,000 square feet of roof, whichever is less; and
 - 4) There is no recoating with a liquid applied coating; and
 - 5) There is no installation of a recover board, rigid insulation or other rigid insulation or other rigid, smooth substrate to separate and protect the new roof recovering from the existing roof.
- g. Roofing area covered by building integrated photovoltaic panels and solar thermal panels.
- h. Roof construction that has thermal mass over the roof membrane with at least 25 lb/ft².

3. LOW RISE (3-Story or Less) RESIDENTIAL BUILDINGS (2013 Cal Energy Code, Section 150.1)

Cool roof is not required for Low Rise Residential Buildings in City of Santa Clara (Climate Zone 4)

4. COOL ROOF HELPFUL LINKS:

Cool Roof Rating Council: www.coolroofs.org or www.coolroofs.org/ratedproducts/search.php

California Energy Commission: www.energy.ca.gov/title24

California Energy Commission "Cool Savings with Cool Roofs": www.consumerenergycenter.org